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CHOP!
IS Trims Down

DATAMATION

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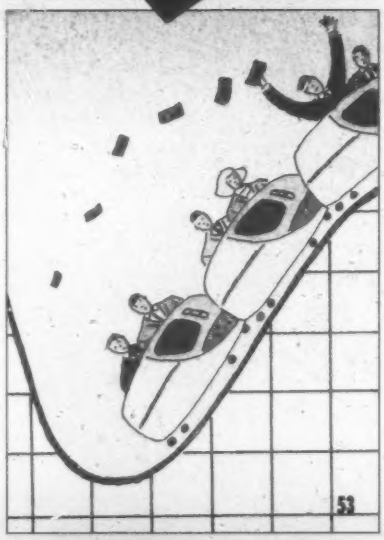

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Cover photograph by
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1987 JESSE H. NEAL AWARD

Editorial

Managing Change: IS's Biggest Challenge

Among the many job requirements for IS pros, one is quickly emerging as preeminent: the ability to manage change. It's not only technological changes that have to be mastered; all IS pros—from corporate MIS directors to data entry operators—must be able to cope with the organizational changes wrought by new information technologies and business trends.

"IS Trims Down" (p. 46) reveals that major user organizations are scrutinizing centralized IS investments as never before, often with an eye toward cutting them or at least limiting their growth. They're motivated by technological change, namely, the decentralization of IS applications afforded by pc/workstation and networking advances, and by business considerations, such as earnings performance and merger mania. IS managers who don't understand these issues and who resist change put their careers, and perhaps those of their subordinates, at risk.

DATAMATION's salary survey (p. 53) reveals that several small shifts are under way in the IS ranks. Although overall raises are nearly on a par with last year, individuals with database, telecom, and IS auditing skills (the right stuff in today's global business environment) are beginning to command greater increases than their colleagues elsewhere in IS. Similarly, those who can communicate the value of information technology to their business-unit peers are in greater demand.

Finally, McKinsey & Co., in "The Myths and Realities of Competitive Advantage" (p. 71), advises top executives to change their attitudes toward IS. The consulting firm argues that technology alone cannot create sustainable advantages—an opinion that has long prevailed among some Fortune 1000 companies—and urges users to integrate technology into their line operations and to use IS to leverage unique institutional skills and strengths. Just how prepared IS pros are to meet the dual challenges of technological and organizational change is questionable. While some organizations seem willing to invest in training their IS employees, we question whether it's enough training and the right kind. When was the last time you heard of an applications programmer taking an employer-sponsored seminar on new organizational dynamics? The burden, no doubt, falls on IS pros themselves. They had better become savvy in the ways of new technology and, more important, new business.

Tim Mead

TIM MEAD
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Letters

A New Gateway

Brad Schultz's article "The Evolution of ARPANET" (August 1, p. 71) incorrectly states "BITNET can only exchange data with the Internet via a special gateway at the University of Wisconsin." The BITNET-Internet gateway ceased to exist on Dec. 15, 1987. The default gateway is at the City University of New York, but many sites—this university included—have private gateways.

BITNET comprises a large and rapidly growing network. Presently, over 2,500 mainframes and minis provide BITNET services directly to an estimated 500,000 users and to hundreds of thousands more via Internet, USEnet, and CSnet. Between 20 and 50 new nodes come on-line each month. Connections are planned to the People's Republic of China and to "Iron Curtain" countries. BITNET reaches the Far East, Southeast Asia, the Middle East (Israel and Turkey), Europe, North America, and Brazil.

Further, David Farber mistakenly asserts that BITNET mainly serves academic administrators: the largest service demand is for software, data, and mail transmission to Europe and Israel. Servers automatically store and distribute public domain software, data, and publications. Relay services provide interactive networkwide teleconferencing.

BITNET does not employ the latest and greatest technology and hardware, but succeeds because it relies on off-the-shelf parts. Nearly every IBM mainframe site connected can afford a leased or dial-up phone line and a 37 x 5 binary synchronous communication port. IBM's internal VNET network uses the same facilities, although there is some direction toward SNA and TCP/IP.

KARL GEIGER
University of Southern California
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Los Angeles

Open and Shut

Since the Open Systems campaign is a move toward an industrywide standard, it should be no surprise that Eastern Bloc governments, with their philosophy of one-size-fits-all, are interested in joining (see Look Ahead, August 1, p. 9).

Even more important than the Open System itself is that the standard remain "open," defining a norm without prohibiting innovation by those who choose to go their own way. If we had computer standards in the same sense that we have building codes, consumers could be assured of buying computers made with only the very best of vacuum tubes.

CAROL PRUITT
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Smooth Transition

I'd like to comment on the final sentence of David R. Brousell's Unix editorial (April 15, p. 3). The Dannon Co., America's largest yogurt manufacturing company, has been successfully using Xenix as the mainstay operating system for seven distribution centers across the U.S. Dannon uses the Progress RDBMS (ported from MS/DOS) and uses Unix (Xenix) as a platform for running Order Entry, Inventory Management, Sales Reporting, On-line Inquiry and 3780 Data Communications to the host in White Plains, N.Y. All applications are concurrent and multiuser. By using Unix as a software platform for portability, we've been able to preserve our applications across multiple hardware platforms. In fact, Unix has allowed us a smooth transition from PC-based Xenix systems to larger Unix-based minicomputers without application code change. This is a cost-effective solution that could not have been achieved using proprietary operating systems.

DAVID J. BERRY
Director of MIS
The Dannon Co. Inc.
White Plains, N.Y.

Just In Case

In "A Guide To Selecting CASE Tools" (July 1, p. 65), Michael Gibson states in his introductory paragraph, "The following questions constitute a comprehensive set of CASE tool selection criteria."

I take issue with this statement. Gibson has fallen into the all-too-common trap of including in the CASE tool menu only those tools that bear on development/maintenance issues. He makes no reference to software testing tools. One could infer from his article that testing is not considered to be a part of software engineering. I would suggest that CASE and software engineering both embrace the testing discipline.

Testers are integral to software engineering, and test tools should be considered a part of any CASE suite.

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IS Trims Down

The rule in IS budgeting today is diminished expectations. Recent surveys by DATAMATION and Price Waterhouse show that growth in IS budgets has slowed or been cut back as corporations scrutinize their IS groups. Decentralization often parallels the cutbacks and seems to be a cosmetic excuse for downsizing in IS.

BY SUSAN KERR

Scott Paper Co., Philadelphia, racked up an impressive 25% gain in profits last year, but its information systems staff at its headquarters was cut by 15%. "Why," asks Scott's IS vp Darwin John, "are we so concerned with keeping close tabs on the size of computer operations when things look this good?" Because, "It's better to be proactively competitive than reactively defensive."

Across the United States, corporations are taking a long, hard look at IS expenditures and staff sizes. Among the fundamental questions being asked is whether computers can provide the necessary payback, particularly in a corporate America fixated on quick sells and buy-outs.

In answer to those questions, many companies are deciding that less is best. That is the worst case scenario. "The best case I've seen," says one executive, "is holding your own."

Those are gloomy words in an economic climate generally described as good. IS departments have seen their share of slumps, but this latest slowdown is different.

While a company's cuts in central IS budgets often are accompanied by a decentralization of IS resources, users say that business conditions have been such that neither extra money nor personnel are provided to handle the more varied work load. Although decentralization often complicates attempts to gauge how much the total IS organization has shrunk, it appears to be little more than a cosmetic explanation for the downsizing in IS.

ISSUES 88

This is the third in a series of articles which will address new management, organizational, and systems issues confronting IS.

Buying and Selling and Cutting

An important reason for both downsizing and the parallel decentralization is the rash of buying and selling that is a fact of modern corporate life. The amount of money and manpower allotted to computer systems often is cut back during mergers and acquisitions because of the cash needed to finance a transaction. Decentralization also is often undertaken because top non-IS managers perceive that a centralized computer structure complicates the acquisition and divestiture of businesses.

Merely Keeping Pace with Inflation

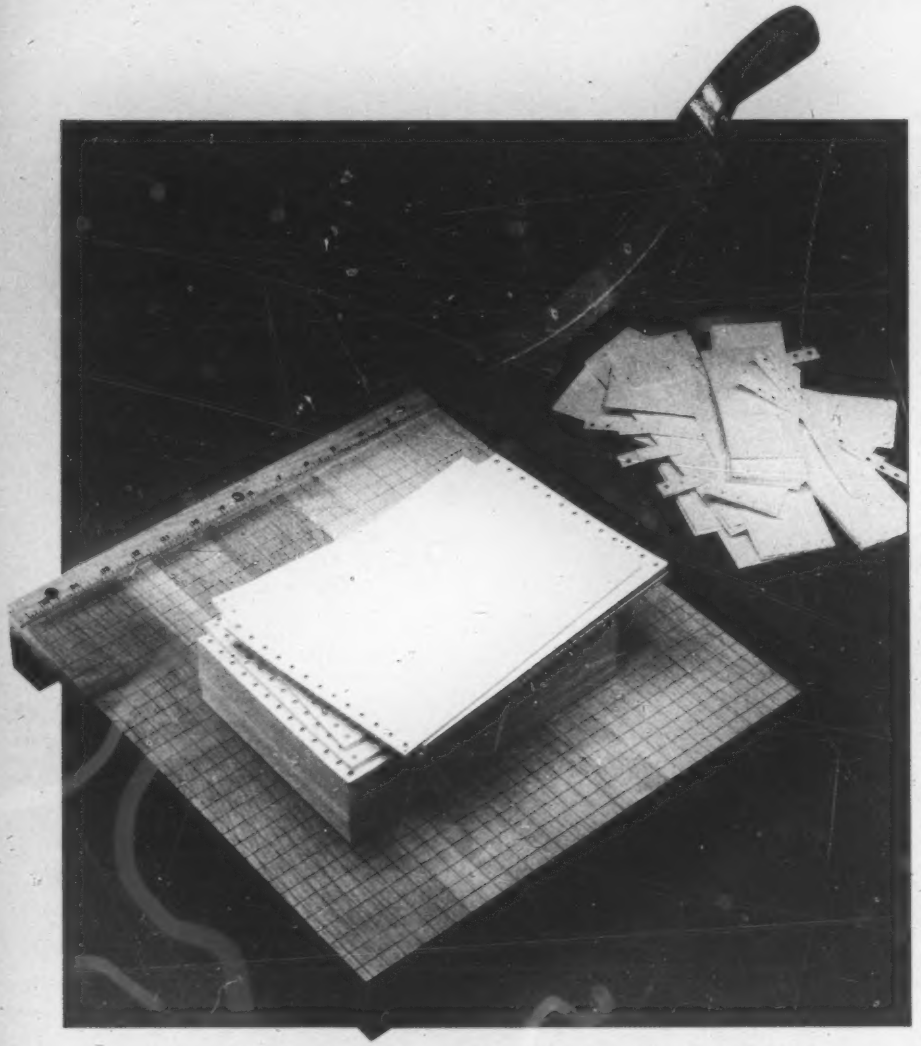
Even companies that project IS growth do so cautiously, and their numbers change almost daily. Surveys conducted by DATAMATION and Price Waterhouse in late 1987 and early 1988 make the trend toward diminishing expectations apparent. In two surveys of 973 information technology executives taken just one quarter apart, the percentage expecting to increase hardware expenditures this year dropped to 50% from 61%. The number that expect to increase systems and applications software expenditures also dropped, to 47% from 49%. The survey numbers do not state by how much these users will increase their IS budgets.

In a series of interviews conducted for this article, however, it appears that just keeping pace with the roughly 5% inflation rate is the best IS departments can hope to do.

The surveys are even less promising when it comes to employment. They show that over 67% of the surveyed professionals have no plans in 1988 to increase the number of systems and programming personnel; that percentage grew 4% from the earlier study. Those who will cut staff grew to 9% from less than 6%.

The salary picture is no better. A recent survey by Edward Perlin Associates Inc., New York, shows that the average salary for top IS positions, primarily in the financial services sector, will increase this year by only 3.6%, less than half of the 7.9% gain shown in 1987 (see "Rate of Salary Increases for IS Execs Is on a Downward Spiral," July 15, p. 32).

These forces are making some IS



pros rethink their profession. "Over time, we're making IS unattractive as a peaking point of a job," says one high-ranking IS executive who is not even in the financial community.

While not cutting back this year, Home Federal Savings and Loan Association, San Diego, will try to ring in 1989 with a flat IS budget. For the past four years, chief information officer Edwin Nichols has seen his budget increase at a slowing rate. "IS in all companies is being scrutinized much more closely than it's ever been," he believes. "Executive management of organizations understands the large expenditures IS is incurring and are asking, 'What is the value to shareholders?' "

The banking industry is in a tough phase, and Nichols must somehow respond to those kinds of management queries. So, he, too, sings the gospel of actively justifying IS's existence. Later this fall, he will present a study to Home Federal of what returns IS is making. For now, Nichols cautions his fellow IS professionals against using the annual budgeting argument that "a little more money this year will bring in returns next year." Next year is here, and IS people had better prove their worth now, he says.

That could easily be the theme song whether you're on the Atlantic, the Pacific, or somewhere in between.

"We've been through a significant downsizing of the 1988 budget, both in dollars and size of staff," says William Harrison, senior vp for Hartford Insurance Group, Hartford, Conn. He hopes the pressure eases somewhat in 1989. Until then, the insurance and financial services company is working hard at getting more for its money.

"We're investing a lot of time and money trying to be more efficient in the development of products," says Harrison. Among the tools Hartford has come up with is its own CASE product, and it has adopted a greater reliance on fourth generation languages, which have "substantially increased our per person ability to build products, so we can accommodate downsizing."

Harrison believes the downward trend is a phenomenon that crosses industry and company lines. Others echo his thoughts. Home Federal's Nichols is planning to accommodate next year's flat budget by using new automation technologies, such as knowledge-based systems. The financial concern also affects other new areas, such as executive information systems.

Elsewhere, companies are looking more closely at packaged software and, of course, at getting as much as possible from existing hardware.

Still, some industries, by their very nature, are more pressured than others. The insurance industry, well known for its IS pioneers, is going through a tough competitive year and cuts are being made as a result. Similarly, last October's stock market debacle had devastating effects on many Wall Street firms (see "Wall St. Crash Survivors: Who Had the Right Stuff?," March 15, p. 41).

"We're taking a very hard look at the systems we've poured money into for the last 10 years and are trying to wring out of that base as much as we can," says Harrison. "We've done a lot of automation in the last decade. The big expense savings are past." Thus, in some cases, he and others imply, it's becoming harder to find and defend computer paybacks.

The result from many of these decisions could be that traditional programmers' roles change and, in some cases, perhaps disappear.

Exceptions to the downsizing trend can be found in industries where computerization is still relatively new and where obvious, immediate, and substantial cost savings result from automating certain tasks (see "The Downsizing Excep-

Photograph by Roeanne Giovanni Inoue

The Trimming Down Trend

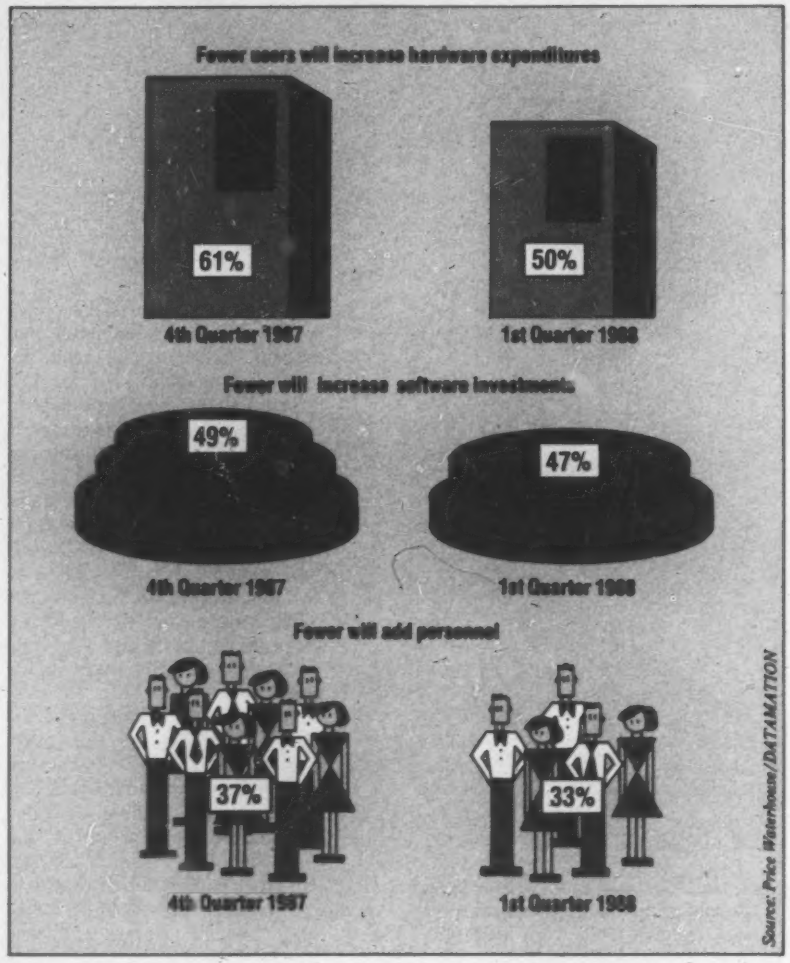


Chart by Catherine Francis

tions"). Even at those companies, however, the amount of new money available for capital IS expenditures is small.

The Name of the Game Is Cost Pressure

For the majority, however, the name of the game is cost pressure, both within and outside IS. Richard Koeller, information services vp for TRW Inc., Cleveland, says the number one reason is that "corporations are facing a complete rethinking of industrial America." Furthermore, the demand to compete globally, and other management crises, are happening alongside specific IS challenges, such as decentralization.

TRW is highly decentralized. Within the last three years, its headquarters IS head count has dropped to 95 from 220. "You need to get more competency and knowledge into the field so that they can think about the job differently," says Koeller. Decentralization is tougher than it sounds, but the attempt alone drastically changes the traditional picture of IS in that it changes who's performing what task and at what cost.

According to a March 15 DATAMATION/Price Waterhouse study, over 50% of companies in the U.S., Japan, and France have moved, or are moving, toward decentralized structures. This gives rise to an easy answer for the downward budget and hiring trend: because computer power and authority are shifting outward, it is not being counted accurately. And, of course, a decentralized central IS budget will become smaller. Yet, many professionals worry that business units and end users will not pick up the same number of people or dollars that were dedicated to larger central information systems. Indeed, if a corporation is under intense cost pressure, a division executive is not likely to hire personnel trained in information systems or to make any big capital expenditures. "Often, the [IS] responsibility is moved outward, but not the staff." Koeller says.

In fact, it is the job of today's IS professional to check expenditures in a decentralized world, notes Home Federal's Nichols. "The role of the CIO," he says, "is not to let the user budget increase at the [same] level [that] IS is decreasing." That takes a lot of diplomacy and training, adds Nichols.

Scott Paper is in the early stages of an IS decentralization program as the result of pressure to reduce fixed costs, of which central IS is seen as being a part. Right now, its internal IS budget is flat or down slightly, but more dollars are being spent at business units.

It's too soon to say if the individual businesses within Scott ultimately will be less willing to spend money on computers, says IS vp John. In the past year, the IS count at headquarters has dropped to approximately 200 people. Some moved into the business units, but the rest left either through attrition or a "voluntary separation" program, through which employees are paid to leave the company.

"At the same time," notes John, "the demand for IS work is as high as it's ever been, and we're all responding to it, although in alternative ways."

One of those ongoing alternative ways is a renewed use of third-party contractors. Two Big Eight firms are helping Scott with projects. The increase in the buy-versus-make decision could lead to an interesting, though not unexpected, result. "IBM controls [the market], not through technology but [through] support and service," says TRW's Koeller. "In a commodity market, they'll be a winner."

Charging IS Costs Back to Users

Another alternative way is now in its third year at lumber giant Weyerhaeuser Co., Tacoma, Wash. IS costs are charged back to users, who may go where they choose for service. Weyerhaeuser planning and administration manager Donald Folsom guesses that throughout the company, information technology related expenditures are growing 5% this year ("the inflation rate," he notes).

Growth in IS is the exception, not the rule, at companies involved in merg-

ers and acquisitions. Allied Stores Corp., for example, decided to discontinue an estimated $30 million IS program following acquisitions by Allied's parent, Campeau Corp. (see "IS Development Is Being Pinched as Mergers Continue," July 15, p. 23).

Another corporation that has seen ups and downs due to acquisitions is McKesson Corp., the San Francisco wholesale drug distributor and retail products concern. This summer, it set out to buy Alco Health Services Corp. of Valley Forge, Pa. Robert Isley, vp and controller of McKesson information technologies division, is used to going back during the year and revising his budget. "We've had a little sizing down because we've sold off a lot of large companies," says Isley. "Our budget has been flat. We've not added a lot of things in the data center."

Things are now settling down somewhat, and with a healthy drug industry, McKesson may see a little IS growth and hiring. If the Alco buy goes through, some growth would also occur, Isley says. Yet, as others have found, while an acquisition brings a nice immediate boost to the IS ranks, it often doesn't last.

HOME FEDERAL'S NICHOLS: Ringing in a flat 1989 budget.

"Each time we grew by acquisition, my budget went up as a result, and then there was a downward step after that," remarks James Beck, director of MIS for Case IH, the Tenneco subsidiary that purchased International Harvester in February 1985, based in Racine, Wis. Beck says that IS expenditures are rising slowly at Case IH, primarily because of an upward trend in sales of farm and construction equipment.

By the end of next year, Beck figures the company will be out of the systems consolidation phase that was fueled by acquisitions. While the company may reduce the number of data centers, Case IH is doing some IS hiring. Salaries have been on the rise in this geographical area, according to Beck, because mid-America is on a comeback.

Defense contractors may not be on such an immediate comeback trail. Lockheed Corp. delivers its last C-5 transport plane next year, ending a multibillion-dollar program. The company may eliminate as many as 18,000 jobs as a result. "There's no question that some will be in IS," says Dean Allen, Lockheed's Calabasas, Calif.-based corporate vp of information and administration. If other projects come through, some will be moved to work on them. This year, Allen suspects that, companywide, Lockheed experienced "modest" IS growth.

"Our IS managers tend to get as much out of equipment as they can," Allen says. "Obviously, when times get tough, you'll keep a piece of gear longer. I suspect we're all doing some of that. Just look at IBM." IBM's negative five-year income growth rate in recent years reflects that user thriftiness.

Going Down for the Count?

With many of these downward signs, does down m n out? In many ways, yes. The years of big percentage gains in budgets is over, a sign of the maturing of the technology and of the concept of information systems.

What will propel gains is new applications that perhaps can be gained only by having former IS professionals out in the field, living in new jobs. Yet, if a budget crunch continues and decentralized IS structures prove too costly and inefficient, some wonder if the tides won't turn and find companies recentralizing. Mitigating such a move may be the idea that large central organizations contradict other tenets of ideal business setups, such as being lean and mean for acquisitions and divestitures.

"Those organizations that are going through cuts need to be careful," warns Home Federal's Nichols. "They must not slash. Instead they must look at returns." Finding those returns is no longer a luxury; it is a top priority. ■

The Downsizing Exceptions

Certain industrial and service segments, which traditionally have been light computer users, have experienced a slight increase in IS expenditures because they still have tasks that can easily benefit from automation. Such IS projects, which provide big cost savings, are therefore more palatable to those in charge of the budget.

The health care industry is one example. One problem facing National Medical Enterprises Inc., Santa Monica, Calif., is finding a way to provide cheaper health care while coping with government funding restrictions. The company believes that computers will help it respond better to these imperatives.

Therefore, management's focus on computerization has intensified, says Barry Ganley, senior vp and head of IS for National Medical's $1.5 billion hospital group. The focus represents a change from recent history. A health care industry fallout, which followed a phase of rapid expansion in the early 1980s, resulted in a flat IS budget for Ganley's division during the last couple of years.

"Some money is being shifted into IS," Ganley says. "So, while total expenses are down, IS is proportionately going up. Still, there's not a lot of money going around for capital expenditures." Corresponding to the slight increase in money, IS head count at the firm may go up between 0.5% and 2% this year.

Ganley mentally grapples with how to prove that automation pays off. It's not so much in replacing people, he maintains, but in improving the way they do their work. That's been the case with the automation of hospital billing procedures, where on-line collection systems cut down payment cycles and improve a hospital's cash flow.

Another traditionally light IS user is CSX Corp., Richmond, Va. Despite mixed financial results, MIS director Richard Moschler says that the transportation company's IS budget is going up. "Railroads are on a very aggressive program of getting new computer applications," he remarks.

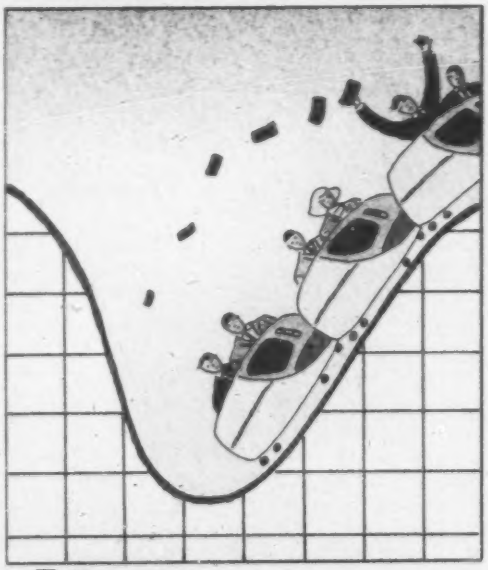
Photograph by James Aronovsky

DATAMATION 88 SURVEY

SALARIES

What Are You Worth In '88?

DATAMATION's annual salary survey shows that IS jobs are more lucrative than ever. Average salaries for IS workers are well above the U.S. average for nonfarm workers; raises are heftier for those on the coasts.



BY DATAMATION REPORT

To say that 1988 started out as a scary year for most IS professionals is putting it mildly. In the aftermath of October 1987's stock market crash, news reports were rife with speculation about a forthcoming business slowdown. Like their non-IS colleagues, IS staffers wondered whether they were going to be able to keep their jobs, much less get raises. But the U.S. economy surged ahead in 1988, carrying with it the careers of IS pros. DATAMATION's annual salary survey shows that IS jobs are more lucrative than ever before, and that the people in those jobs are optimistic about their immediate futures.

There's no question that, in general, IS specialists are better paid than the typical American. According to the U.S. Department of Labor's Bureau of Labor Statistics (BLS), non-agricultural workers employed by private industry earned an average of $16,799 in the year up to June 1988, a rise of 3.6% from $16,216 a year earlier. Of the 47 IS job categories surveyed by DATAMATION, not a single position's mean wage was under this national average. This year, in fact, only two IS posts reported mean salaries of less than $20,000—word processing operators and data entry operators. (In last year's survey, these two positions—along with a third category, magnetic media librarian—weighed in with salaries *below the national average.)*

IS jobs are more lucrative than ever, and most IS staffers are optimistic about their futures.

IS salaries are growing at a faster pace this year than last. BLS says the average salary increase for all American white-collar workers with a professional specialty or technical expertise was 4.8%. The IS executives polled by DATAMATION *reckoned that the average raise* garnered by their staffs will be 6.6% this year, better than 1987's 6.2% increase.

The overall averages, as good as they are, include some even more impressive gains made in several IS specialties. Comparisons between this year's salary survey and last year's show that mean earnings in fully two thirds of the IS job categories studied by DATAMATION were at least 6% higher in 1988 than those reported in 1987. Earnings in half of the classifications were higher by at least 10%.

DATAMATION did find a handful of positions in which mean salaries actually fell between 1987 and 1988. Office automation employees suffered, with both word processing supervisors and microcomputer user services specialists reporting lower average incomes. Poorly rewarded jobs were not confined to the lower ranks of IS organizations, however. The mean salary for directors of security was off more than 9% from last year's figures.

In the quest for bigger bucks, this has been a particularly good year for operating systems programmers. DATAMATION's research broke the OS specialty into four levels, and of these four positions, three—junior, intermediate, and senior programmers—posted the largest average salary increases of any job classifications in the survey. OS department managers didn't suffer either, still making it into the top third of average wage increases by job category. This is good *for systems experts, but it can lead to dis-*

Illustration by Kurt Vargo

ruption at the firms for which they work.

When Wayne A. Bearstler, the IBM systems project manager at the Linthicum, Md.-based special programs operation of Computer Sciences Corp. lost two of his better operating systems programmers to other firms, he found out that they got 20% to 25% more pay at their new jobs. He believes his situation is not isolated, but rather that it's symptomatic of a trend in the industry as a whole.

Companies seek to lure "personable" operating systems specialists.

Looking for Corporate–IS Synergy

The IS professionals who are getting the most impressive offers, Bearstler believes, are those who can position their companies to gain greater advantage from improved IS technologies . . . and who can explain this process to top management. But it is difficult for companies to find those who can bridge the gap between IS departments and the executive ranks. "There are just very few people who can tie the computer perspective, the business perspective, and the legal perspective together with a view to making a company more cost-effective," Bearstler asserts.

Operating systems specialists have the IS know-how, he continues, but they also seem to be "anti-social types, ones who can't be easily integrated into the corporate culture." The top brass at corporations across the country, just now realizing the importance of effective input from these people, are snapping up the most personable of the bunch with the lure of big salary increases.

Even before this new wave of recognition washed across OS groups, their employers had seen the value of systems talent. In a ranking of DATAMATION's 47 survey categories by mean salary, all four OS jobs were among the top 10.

Another area to watch is systems analysis and applications programming. The upper echelon of this group made a strong showing in salary increases between the 1987 survey and this year's numbers. Of the six positions specified in the survey, the top three slots—manager, lead systems analyst/programmer, and senior systems analyst—each reported, on average, 16% higher pay than last year's survey respondents did.

Salaries of computer operations staffers, while still generally low by IS professional standards, improved quite a bit from the levels reported to DATAMATION last year. Computer operator and shift supervisor positions averaged gains of around 20% during the year.

Randolph Burkhart, vp of information resources management at glassware marketer Princess House Inc., North Dighton, Mass., explains that he was forced to raise operations staff pay because he moved several employees into operations from other, higher-paying jobs in his company. "We had to adjust upward the wages of the people who were already in place to match the levels of the new ones," he says.

Employers' staffing problems are only one reason salaries have gone up for operation personnel. Ira Edelman, IS manager for SPD Technologies, a circuit breaker manufacturer based in Philadelphia, cites a very different reason for the increases among his operations people. "In our case," he explains, "it's because our computer operations staff is unionized. They get a cost-of-living adjustment as part of their salary, and they get quarterly raises. You can pretty much say that they have senior tenure; they're here for the duration."

The increases reported in the 1988 survey don't necessarily guarantee continuing wage leadership for this year's big gainers. IS executives say that the next boom in salaries may well be in different areas, as companies emphasize new goals for their IS departments. CSC's Bearstler predicts a jump in demand for telecom specialists and database professionals, with remuneration growing to match. At the same time, he adds, some IS personnel may find that their areas of expertise will become overcrowded. He cites programmers who work in second and third generation languages as examples of specialists whose skills are growing abundant.

Moving In New Directions

Bearstler's views are supported by a study conducted by Source Edp, a recruiter of computer professionals based in San Mateo, Calif. This research indicates that demand for IS professionals is already swinging in new directions. According to the firm, compensation is higher than average for IS auditors and

Job Descriptions

The following is the job description guide respondents to the survey used.

Corporate staff: reports to senior management within corporation.

Applications programming: develops, designs, and prepares programs.

Systems analysis/programming: systems analysis and applications programming.

Operations systems programming: programs and maintains systems software.

Database administration: plans, organizes, and schedules the activities of the database section; establishes standards, maintains dictionary.

Datacom/telecom: develops and designs datacom networks and the installation and operation of data lines.

Computer operations: in charge of equipment, data entry, production control, and postprocessing, but not systems analysis, or other development functions.

Production and I/O control: sets up and schedules jobs for processing so as to maximize utilization and meet turnaround requirements.

Data entry: performs data entry and verification functions.

Office automation: operates word processing equipment, intelligent typewriters, and terminals for text editing/word processing.

Job Levels

Manager: advanced degree and minimum five years' experience or equivalent combinations; strong management skills, performs personnel evaluations, budgeting, progress reporting, and project management.

Lead: bachelor's degree or equivalent, minimum four years' experience (two in supervisory capacity); performs supervision as a project manager.

Senior: bachelor's degree or equivalent and minimum three years' experience, including some supervisory functions.

Intermediate: bachelor's degree or equivalent and minimum two years' experience; requires some direction.

Junior: two to four years' college and six months' experience; directly supervised.

Illustration by Kurt Vargo

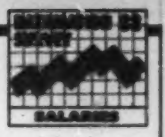
Average Salary by Region (in $)

	ALL	BOSTON	MANHAT	NYC AREA	PHILA	WASH/ BALT	ATLANTA
CORPORATE STAFF							
■ Vice President	67,643	100,010	63,875	99,500	68,500	83,167	48,333
■ Director of Dp/MIS	54,189	54,571	250,000	63,921	50,500	56,827	44,000
■ Technical Services Manager	56,859	62,500	75,000	53,400	49,000	40,000	53,000
■ Information Center/Data Center Manager	42,203	40,667	77,500	46,500	23,000	57,000	36,800
■ Director of Security	40,876	40,000	40,000	44,000	40,000	56,250	22,000
SYSTEMS ANALYSIS							
■ Manager	45,561	55,000	50,810	55,000	40,667	50,000	42,471
■ Senior Systems Analyst	41,518	44,252	80,000	46,429	40,650	41,250	41,200
■ Lead Systems Analyst	37,067	40,000	60,000	42,500	35,000	41,000	NA
■ Systems Analyst	33,446	35,000	50,000	36,588	30,000	37,000	27,500
■ Junior Systems Analyst	27,599	28,000	NA	31,500	22,250	35,000	NA
APPLICATIONS PROGRAMMING							
■ Manager	45,581	50,000	65,000	48,000	41,000	52,000	29,500
■ Lead Application Programmer	38,269	40,000	40,000	44,250	39,150	34,250	31,000
■ Senior Application Programmer	36,397	35,000	42,025	42,500	NA	34,125	34,260
■ Application Programmer	28,493	31,929	34,000	40,333	23,400	28,334	33,750
■ Intermediate Application Programmer	26,127	28,500	30,000	34,500	23,250	25,037	NA
■ Junior Application Programmer	22,947	28,167	29,000	33,000	19,500	24,000	NA
SYSTEMS ANALYSIS/PROGRAMMING							
■ Manager	51,316	49,000	50,000	51,571	46,000	60,000	29,642
■ Lead Systems Analyst/Programmer	42,430	40,667	40,000	43,200	37,100	42,913	NA
■ Senior Systems Analyst/Programmer	38,974	30,500	38,500	38,750	29,500	42,500	40,500
■ Systems Analyst/Programmer	30,926	31,333	28,000	33,700	26,875	35,966	30,750
■ Intermediate Systems Analyst/Programmer	28,079	NA	NA	32,000	25,800	37,500	24,000
■ Junior Systems Analyst/Programmer	23,620	23,250	25,000	28,667	19,000	34,000	16,922
OPERATING SYSTEMS PROGRAMMING							
■ Manager	57,351	50,006	75,000	NA	NA	39,333	NA
■ Senior Systems Programmer	57,846	45,000	44,000	NA	NA	43,250	NA
■ Intermediate Systems Programmer	47,940	31,250	40,000	NA	40,000	40,000	35,000
■ Junior Systems Programmer	47,462	NA	29,000	NA	NA	35,000	NA
DATABASE ADMINISTRATION							
■ Manager	41,649	45,000	55,000	47,667	35,000	48,000	NA
■ Database Administrator	36,579	31,875	35,000	46,000	36,000	30,500	NA
DATACOM/TELECOM							
■ Manager	46,005	41,667	65,000	43,000	27,000	NA	NA
■ Analyst	33,998	34,000	40,000	35,333	14,000	NA	NA
COMPUTER OPERATIONS							
■ Manager	37,072	38,000	55,000	42,444	45,000	48,333	28,750
■ Shift Supervisor	30,827	27,333	40,000	40,750	38,933	28,822	24,000
■ Lead Computer Operator	24,464	24,333	24,000	30,500	19,850	21,433	19,433
■ Computer Operator	21,346	20,750	24,250	27,583	34,457	20,949	17,700
■ Magnetic Media Librarian	20,887	20,333	21,000	24,500	NA	NA	NA
PRODUCTION AND I/O CONTROL							
■ Supervisor	29,016	NA	24,000	28,500	NA	28,000	28,150
■ Lead Production Controller	26,433	45,000	22,000	NA	33,000	NA	22,200
■ Scheduler	24,493	36,000	19,000	18,000	11,000	NA	18,000
■ Control Clerk	21,127	20,325	15,000	17,000	12,100	NA	16,550
DATA ENTRY							
■ Supervisor	22,898	24,333	28,000	22,600	19,125	16,093	18,000
■ Operator	16,838	16,250	19,000	18,362	17,800	15,683	14,754
OFFICE AUTOMATION							
■ Word Processing Supervisor	23,822	24,000	26,500	34,000	NA	20,000	NA
■ Word Processing Operator	17,930	20,667	20,000	20,500	NA	17,000	13,500
■ Microcomputer User Services Specialist	25,054	25,500	NA	28,500	NA	NA	28,000
OTHER							
■ Specialists	24,828	25,000	30,200	32,000	NA	17,500	NA
■ Consultant	48,810	20,000	76,667	50,000	35,000	28,000	51,000
■ Pc Evaluator	32,127	30,000	NA	NA	NA	NA	NA

CHI	MINN/ ST. PL	CLEVE	CINN	DTRT	ST. LOU	HOUS-TON	DENVER	DALLAS	SEATL	SAN FRAN	LOS ANGEL
48,333	47,000	40,000	52,500	70,000	48,667	100,028	57,500	54,000	NA	85,000	72,200
55,556	47,000	42,500	56,857	67,500	49,500	71,333	46,080	52,250	45,840	60,000	64,696
47,500	NA	35,000	50,500	45,000	NA	NA	55,000	54,000	40,000	NA	50,859
48,000	NA	28,052	41,333	36,000	25,000	100,000	48,000	30,902	37,500	57,667	43,125
30,000	NA	NA	NA	NA	NA	NA	30,200	NA	NA	NA	80,000
46,082	32,750	NA	41,333	NA	NA	NA	62,400	28,000	NA	NA	46,520
38,400	30,000	40,000	44,000	45,000	NA	NA	42,000	54,000	NA	NA	45,883
40,000	34,300	NA	29,000	NA	NA	NA	46,500	NA	NA	NA	31,000
35,000	29,500	27,000	30,000	NA	38,200	30,000	35,000	25,000	NA	NA	41,230
26,500	NA	NA	23,000	NA	NA	NA	30,000	NA	NA	NA	NA
50,143	42,000	NA	30,250	48,000	NA	NA	58,200	50,000	NA	61,000	44,000
39,800	NA	NA	36,333	48,000	23,500	NA	54,100	38,000	42,000	35,000	30,000
38,250	NA	NA	28,867	40,000	NA	NA	41,800	32,000	NA	46,833	40,500
31,571	31,000	28,000	27,500	23,500	NA	NA	31,300	28,000	14,000	33,000	31,740
25,667	NA	23,000	NA	30,000	21,000	NA	24,400	35,000	NA	24,000	30,500
19,667	18,000	NA	NA	23,000	NA	NA	26,400	NA	NA	28,000	23,500
49,400	NA	NA	40,000	55,500	41,533	61,250	39,050	40,000	45,000	50,667	64,667
37,600	NA	33,667	NA	46,000	40,450	47,500	37,925	NA	NA	40,333	44,885
36,900	32,500	27,000	28,700	40,000	33,033	45,000	31,700	NA	35,000	48,000	43,826
35,333	NA	23,500	28,000	35,000	31,100	35,000	30,750	NA	29,000	32,750	36,208
29,450	NA	NA	22,000	30,000	25,133	30,000	31,450	NA	32,000	NA	32,975
23,333	NA	NA	NA	NA	NA	NA	21,533	NA	26,000	26,500	23,038
44,000	NA	NA	31,000	48,000	52,800	NA	NA	NA	42,000	30,000	66,150
36,000	NA	NA	NA	28,000	38,900	35,000	38,000	NA	NA	NA	50,524
29,500	29,500	NA	NA	35,000	31,200	NA	27,000	NA	40,000	42,000	43,133
20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26,000
40,000	NA	NA	44,000	65,000	NA	NA	33,625	45,000	NA	NA	NA
28,500	27,000	NA	NA	NA	37,000	41,000	33,133	NA	NA	NA	41,667
49,333	NA	NA	NA	NA	44,000	NA	42,250	NA	NA	NA	37,500
28,500	NA	NA	25,000	NA	25,000	NA	33,250	33,000	35,000	NA	36,467
42,571	24,400	20,000	25,500	39,667	40,600	24,000	34,154	NA	38,000	38,167	42,370
31,900	NA	NA	NA	20,000	28,933	NA	22,500	34,000	23,500	33,500	41,529
22,418	16,060	24,000	22,000	20,000	25,050	30,000	21,000	23,224	19,500	23,167	29,278
23,857	16,000	21,500	19,000	19,000	17,475	NA	18,020	19,728	23,500	21,760	25,215
25,000	NA	NA	NA	NA	21,500	NA	18,000	NA	20,000	24,000	21,725
33,000	NA	NA	NA	NA	NA	19,000	NA	50,000	35,000	NA	24,513
25,000	NA	NA	NA	18,000	NA	NA	NA	NA	22,000	NA	36,000
25,667	NA	NA	NA	36,000	30,200	NA	NA	NA	NA	NA	15,500
20,000	NA	NA	NA	18,000	NA	NA	NA	NA	10,000	NA	18,025
22,736	27,000	NA	NA	15,000	25,300	20,300	20,000	NA	22,000	30,000	24,810
20,927	15,000	NA	15,250	16,000	15,275	20,244	16,333	15,158	16,000	19,800	21,884
21,750	NA	NA	NA	NA	NA	NA	25,000	24,000	NA	28,000	NA
22,500	NA	18,000	NA	NA	NA	14,000	29,000	NA	23,500	NA	NA
28,500	26,750	NA	21,333	NA	35,900	NA	20,000	NA	24,000	NA	35,000
NA	19,800	25,000	NA	NA	38,200	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	56,000	52,000	NA	40,000	61,333
37,000	NA	NA	NA	NA	NA	NA	NA	NA	40,000	NA	31,250

Average Salary by Industry (in $)

	ALL	CONSUM MFG	INDUS MFG	BANK	FINAN	EDP SERV	DISTRIB
CORPORATE STAFF							
■ Vice President	67,643	82,500	90,657	59,850	50,500	58,250	61,250
■ Director of Dp/MIS	54,189	57,040	54,445	NA	157,500	52,600	50,498
■ Technical Services Manager	56,859	54,875	97,875	38,000	52,000	49,400	37,500
■ Information Center/Data Center Manager	42,203	43,100	47,083	45,640	45,000	50,000	41,629
■ Director of Security	40,876	40,000	65,000	NA	40,000	40,000	NA
SYSTEMS ANALYSIS							
■ Manager	45,561	49,333	49,250	42,000	50,810	44,600	43,750
■ Senior Systems Analyst	41,518	42,274	40,812	58,000	NA	45,409	37,500
■ Lead Systems Analyst	37,067	36,600	36,533	60,000	NA	29,333	28,000
■ Systems Analyst	33,446	32,368	31,278	35,500	NA	34,800	29,750
■ Junior Systems Analyst	27,599	28,333	25,600	NA	NA	26,500	27,000
APPLICATIONS PROGRAMMING							
■ Manager	45,581	45,750	44,625	26,750	65,000	55,667	43,333
■ Lead Application Programmer	38,269	41,600	39,000	23,000	50,000	43,750	30,000
■ Senior Application Programmer	36,397	37,286	35,943	44,050	40,000	38,857	29,000
■ Application Programmer	28,493	30,370	27,750	25,500	35,000	33,242	28,640
■ Intermediate Application Programmer	26,127	33,000	24,833	25,000	NA	27,500	23,000
■ Junior Application Programmer	22,947	23,917	24,425	30,000	28,000	26,000	18,750
SYSTEMS ANALYSIS/PROGRAMMING							
■ Manager	51,316	50,312	67,655	26,000	48,500	64,000	39,333
■ Lead Systems Analyst/Programmer	42,430	40,944	48,053	NA	38,500	45,667	42,000
■ Senior Systems Analyst/Programmer	38,974	35,920	47,005	20,000	39,000	42,833	31,667
■ Systems Analyst/Programmer	30,926	32,697	31,695	20,000	28,000	30,500	32,500
■ Intermediate Systems Analyst/Programmer	28,079	28,089	28,245	NA	NA	30,000	30,000
■ Junior Systems Analyst/Programmer	23,620	25,500	22,823	NA	25,000	25,000	NA
OPERATING SYSTEMS PROGRAMMING							
■ Manager	57,351	49,252	50,450	NA	56,667	44,500	39,500
■ Senior Systems Programmer	57,846	42,600	39,644	NA	52,500	42,500	42,000
■ Intermediate Systems Programmer	47,940	37,333	34,188	NA	40,000	60,000	35,000
■ Junior Systems Programmer	47,462	34,000	29,750	NA	29,000	30,000	NA
DATABASE ADMINISTRATION							
■ Manager	41,649	39,000	47,000	NA	55,000	48,000	NA
■ Database Administrator	36,579	38,200	37,143	NA	35,000	40,000	30,000
DATACOM/TELECOM							
■ Manager	46,005	44,667	52,600	NA	65,000	NA	NA
■ Analyst	33,998	28,000	38,567	NA	40,000	NA	NA
COMPUTER OPERATIONS							
■ Manager	37,072	36,714	33,814	31,057	40,000	40,667	38,908
■ Shift Supervisor	30,827	27,571	27,180	23,690	40,000	32,000	32,950
■ Lead Computer Operator	24,464	22,735	29,489	17,670	22,333	23,333	22,764
■ Computer Operator	21,346	19,939	23,800	15,778	23,500	20,500	17,862
■ Magnetic Media Librarian	20,887	24,667	18,362	NA	21,000	NA	NA
PRODUCTION AND I/O CONTROL							
■ Supervisor	29,016	27,500	31,333	19,000	23,500	23,000	27,150
■ Lead Production Controller	26,433	34,500	24,000	NA	22,000	NA	20,100
■ Scheduler	24,493	32,000	30,800	13,000	19,000	18,000	20,500
■ Control Clerk	21,127	20,250	35,250	NA	15,000	17,000	16,300
DATA ENTRY							
■ Supervisor	22,898	21,611	22,516	NA	21,800	28,000	23,800
■ Operator	16,838	15,384	17,839	10,000	25,073	16,333	17,522
OFFICE AUTOMATION							
■ Word Processing Supervisor	23,822	28,333	19,000	25,000	23,000	20,000	NA
■ Word Processing Operator	17,930	18,800	17,214	12,200	21,750	17,000	NA
■ Microcomputer User Services Specialist	25,054	25,833	24,300	18,000	NA	NA	30,000
OTHER							
■ Specialists	24,828	27,667	19,800	NA	30,200	25,200	NA
■ Consultant	48,810	39,233	52,000	90,000	50,000	47,429	NA
■ Pc Evaluator	32,127	27,500	36,800	NA	NA	NA	NA



GOVT	MED/ LEGAL	TRANS/ UTIL	EDUCA	CONSTR/ MIN/ AGRI	ANNUAL SPENDING <$1 MIL	ANNUAL SPENDING >$1 MIL
46,146	38,443	48,667	30,500	48,500	40,834	49,853
41,143	40,660	39,286	31,667	NA	39,848	42,172
41,326	27,500	37,333	NA	NA	30,082	40,726
33,744	36,433	33,440	NA	32,000	30,158	36,158
29,677	23,360	28,333	NA	NA	24,198	29,031
44,418	44,350	47,607	38,547	NA	54,030	50,256
38,039	37,075	44,843	35,250	38,500	40,600	44,571
34,479	32,350	39,331	27,500	44,000	41,938	37,901
30,323	30,680	33,270	24,300	28,500	29,697	33,271
32,250	21,000	29,797	19,980	24,000	24,580	30,995
24,372	21,205	22,528	13,000	NA	20,564	26,878
40,568	NA	42,814	32,000	NA	30,875	46,228
38,072	NA	38,236	32,000	42,000	29,218	39,676
41,243	31,333	43,486	31,333	33,500	31,367	42,727
31,790	33,700	46,631	24,667	NA	25,392	33,884
24,451	21,317	26,915	16,333	25,000	22,863	26,724
25,163	17,712	24,048	20,100	17,667	20,969	21,970
20,550	NA	21,046	15,000	24,000	16,811	21,366
25,518	19,136	27,377	18,000	16,500	20,469	25,314
18,907	13,990	19,159	14,492	19,000	15,851	18,933
16,700	28,000	35,100	14,000	NA	23,029	26,070
NA	41,000	NA	28,500	NA	49,042	47,386
26,400	35,000	NA	32,000	NA	37,000	32,290

analysts with expertise in communications, database management, office automation, and information center analysis.

Where you work can have a big effect on what you make and how fast your pay is likely to grow. Data on raises provided by DATAMATION's survey respondents show considerable variation with the employee's geographical location. IS professionals from the San Francisco and Silicon Valley areas, for example, said raises averaged 10.6% in 1987. This unusually rapid growth in compensation has not escaped the attention of companies in that area.

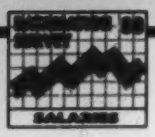
One San Francisco-based MIS director (who did not want to be identified) asserted that his company was relocating because it could not keep up with the Bay Area's prevailing salary hikes. According to this vp, by moving to a new location 75 miles away, his company will be able to operate where IS salaries average 18% lower. Los Angeles area respondents also reported solid gains: average increases were 8.3% in 1987, and, in 1988, the average wage increase will be 10.2%.

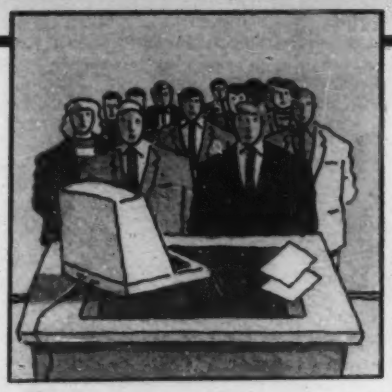
Raises Lower Between the Coasts

Workers in Boston, Atlanta, Philadelphia, and Manhattan also beat the national average in 1987, and they expect to do so again in 1988. And even though average IS salaries in the Baltimore-Washington region aren't setting national records, Bearstler thinks they are a mite too high. The reason, he believes, is not the area's shallow pool of talent. On the contrary, he notes, there is a good supply of qualified people. According to Bearstler, local companies are paying excessive wages because they don't want to be bothered training people just out of school. "They only look at midlevel people, and it's a shame. They're overlooking a wealth of knowledge," he says.

Unlike their fast-track colleagues on both coasts, IS professionals in the heartland found themselves in a financial quagmire this year. Survey respondents in Cleveland, Cincinnati, and St. Louis reported raises of 4%, well below the national average. Their counterparts in Houston, a city still hurting from a slump in the oil industry, did even worse in 1987—average raises that year were put at 3.3%—but they expect an upturn this year, estimating 1988 increases at 5.6%.

Outside the major metropolitan areas, the thin labor market takes a toll; neither employers nor employees have as many options. Richard Mellor, IS manager for the MIS unit of Harford County, Md., isn't overly concerned about rising





Some IS personnel may find overcrowding in their areas of expertise.

wages or heavy turnover. He really doesn't need to worry because, as he explains, "There are only three or four computer shops in this area. If our people want to work close to home, they don't have that many options."

The amount and growth of IS professionals' earnings in one industry can be quite different from those in another. An industry-by-industry breakdown of average raises confirms the expected—the IS side of the financial industry has felt the effects of last October's stock market crash.

Executives in this sector report that last year their raises averaged 13.8%. By contrast, the average 1988 raise reported by IS professionals in finance was 7.1%. Even so, IS pros in the financial sector indicate they will still beat the national average of IS wage gains by about half a point.

Among the other industry groups providing better-than-average IS salary increases this year are banking, consumer goods manufacturing, and medical and legal services. By contrast, IS managers in education, transportation, and industrial goods manufacturing markets are giving their IS employees smaller increases than most.

In between—exactly on the national average—was the government sector, which improved IS employees' earnings by 6.2%. That midpoint is precisely where Harford County's IS manager would put his shop. Mellor says he just "can't compete with the state's big IS employers like Baltimore Gas & Electric"; but he can reward his people more handsomely than many other local firms.

Some industry segments are subject to odd fluctuations in their work cycles, and, occasionally, this can play havoc with raises. CSC's Bearstler says 1988 has been a relatively good year for wage increases at his shop, particularly in comparison with last year, when revenue from its major customer, the Department of Defense, went through a dip. He recalls, "The end of 1987 was very slack for us. Gramm-Rudman had a very large impact; there were fewer funds available and that [had an impact on] our growth projections." Adding more pressure to control wages was a corporate reorganization that turned his group into a profit-and-loss center. On top of that, Computer Sciences moved to an annualized review system, and some raises were deferred.

Compensation packages offered to IS professionals include a great deal more than salary. According to this year's survey respondents, almost 90% of their companies offer medical coverage to both management and staff. Also on the list of common prerequisites are paid vacations, life insurance, disability insurance, and dental coverage, all of which

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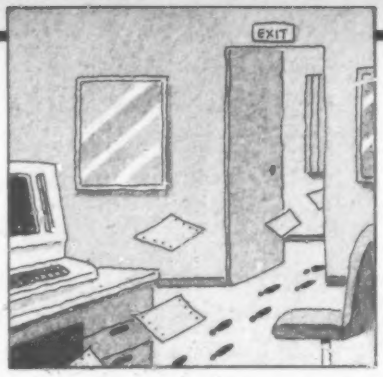

Illustration by Kurt Vargo

are available to staff at more than 50% of the responding companies. Other fringe benefits, like company cars and club memberships, are generally less abundant, according to the survey results; when they are offered, it's typically only to IS employees who are considered to be management.

One perk with lasting value is education. Not only does it make employees more productive, it also helps them move up the corporate ladder. Last year, the average IS employee was given 64 hours of training at an estimated cost of $2,800.

Employee turnover rates among IS professionals edged up this year compared to last, but remained lower than that of two years ago. DATAMATION readers reported that, on average, 7.5% of their personnel have been or will be replaced during 1988. In 1987, the turnover rate was 7.2%, a marked decrease from the 8.8% rate reported for 1986.

Both this year and last, the financial sector was more volatile. IS turnover in finance is currently running at a 15% rate, twice the all-industry average, and even higher than last year's 13.7%. But Wall Street isn't the only business sector with high employee turnover. Banking, too, is in turmoil, and this year will witness the changeover of 15.2% of its IS professionals. During 1987, turnover in banking was 7.7%, marginally above the national average.

Faster turnover is just one unfortunate product of dynamic expansion.

Small Companies Report Less Turnover

Small companies seem to experience less IS personnel volatility than large ones. Survey respondents at companies with less than $1 million in annual revenue expect to end 1988 with an IS turnover level of 5.2%. At the other end of the spectrum, reports from companies with yearly revenue of $3 billion or more put 1988 turnover at 9.7%.

The survey data for companies between these extremes confirms the pattern: in general, bigger shops must replace a greater percentage of their employees each year. CSC's Bearstler believes faster turnover is just one of the unfortunate concomitants of growth, and he cites his five-year-old group at Computer Sciences as an example. "In the early years, we had 3% to 5% turnover," he says. "Last year it was about 7%, and we will probably hit 10% in a few years."

Change per se may add to the rate of turnover, and when that change includes IS headaches, the effect is compounded. Princess House hired Randolph Burkhart in 1984 to renovate IS. Before his appointment, the IS department only supported order processing, and most of the work was in maintenance. Burkhart implemented a heavy investment in systems development, and then, in 1986, sales volume fell by 30%. "The company enacted strategies to counteract the downturn, and this meant a lot of pressure on people, a lot of changes in programs," he says. "Many had a hard time adjusting to that, and they left." But now the business is healthy again. "We've got good players, more experienced people. Things are settling down," he says. ■

METHODOLOGY

On June 24, 1988, 3,000 questionnaires were mailed to a random sample of DATAMATION subscribers. The sample was selected according to the following criteria: 2,010 names selected by key man per site; and 990 names selected by key man per site at Fortune 1000 companies. The sample was drawn on an "nth-name" basis from those who qualified according to the above criteria. That is, names were selected at a specified interval throughout the list so that a systematic random sample of the entire list resulted. To achieve the highest possible response rate, each outgoing envelope was personally addressed to the recipient, and a brand-new $1 bill and a prepaid reply envelope were included to facilitate return of the completed questionnaire. By July 21, 424 completed questionnaires had been returned, indicating a response rate of 14.1%. The results were tabulated and this report was based on the data from the 424 replies.

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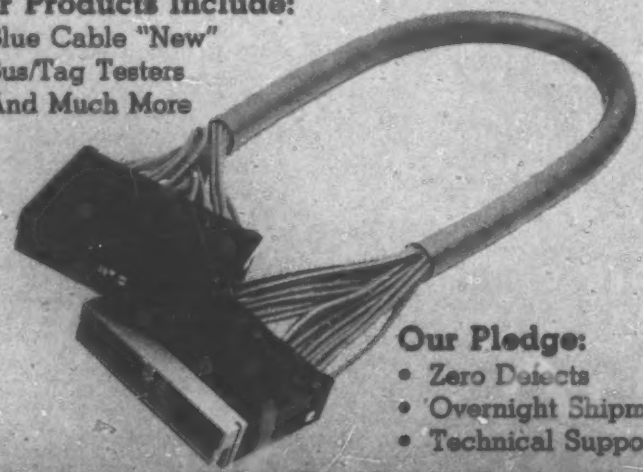

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